

Lab 6. Antennas

Name: _____

Section: _____

Due at the beginning of lab.

Task 11. Antenna for “Radio City”

Congratulations!!! You have just graduated from Penn State with a degree in Electrical Engineering and have landed a job with the prestigious radio station *Radio City – 90.1FM*. As your first assignment, you are to work on a team to set up their newest radio station for the *Meadows* near Las Vegas, NV.

As shown in Fig. 1, Radio City has bought a small plot of land (the red spot north of the city) just outside the city and hopes to provide service to all of Las Vegas while conserving power by not having their signal transmitted to the surrounding desert and the National Wildlife Refuge. The radio station uses half-wave center-driven dipole antennas to transmit the 90.1-MHz radio signal.

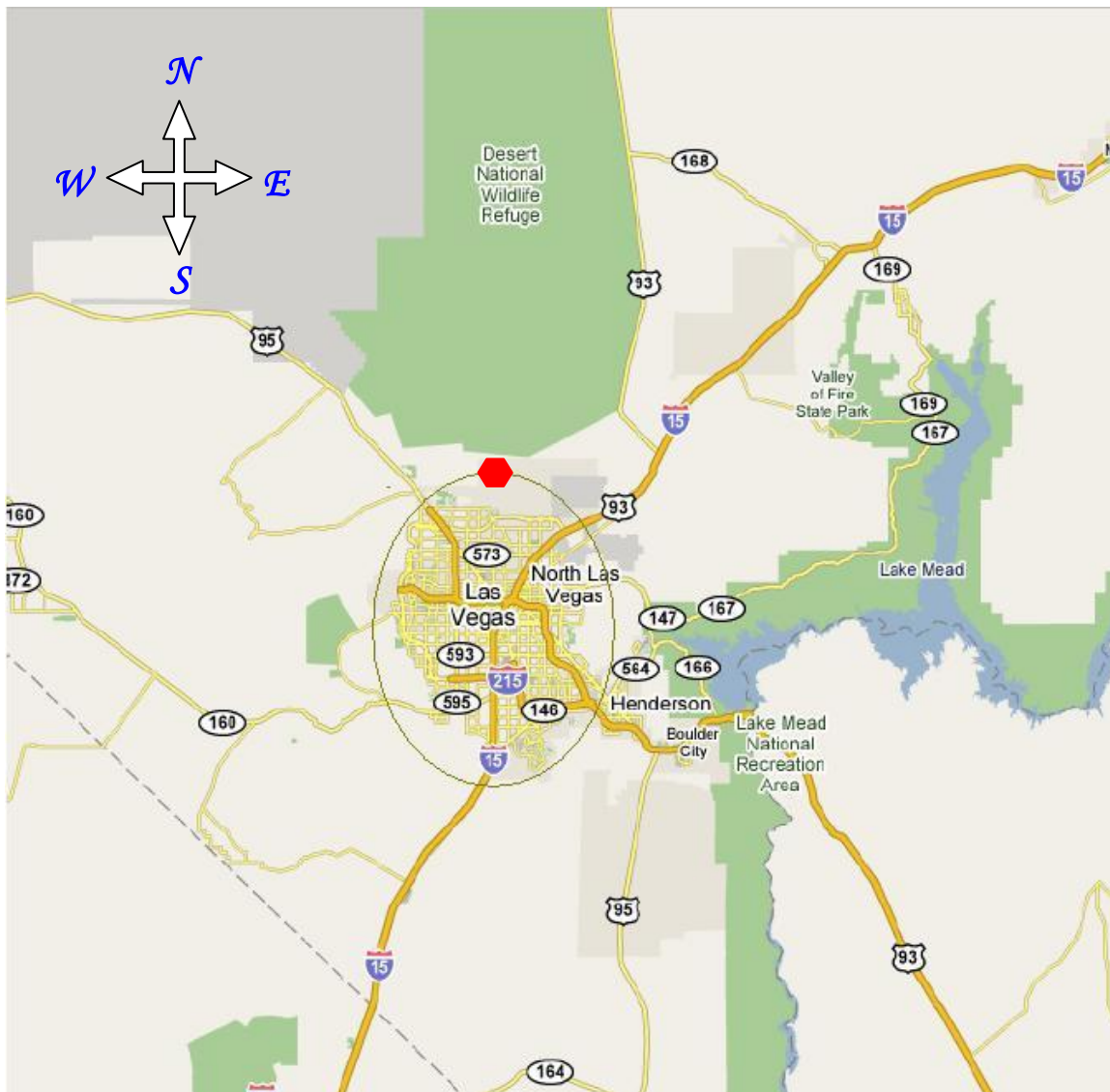


Fig. 1. Expected area of coverage for the radio transmission

You think back to your EE 330 class where you learned how using multiple antennas in a linear array pattern can be used to achieve concentration of signal in certain directions by producing nulls at appropriate angles and nodes at others. You know that at least two antennas are necessary in order to achieve your goal. Therefore, you are to simulate the radiation pattern for the case of two identical antennas that form a uniform linear array and determine whether such an array will work for you. To do so, you first decide on the array parameters and orientation.

Briefly explain how you are going to position the antenna elements and orient their axes (use the coordinate system shown in Fig. 2 as a reference and consider the symmetry properties of the antennas).



Fig. 2
